

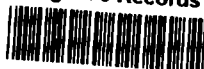


DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

EPA Region 5 Records Ctr.



255425

DATE: MAY 22 1990

FROM: Louise Fabinski & Denise Jordan-Izaguirre, ATSDR
Regional Representatives, Region 5

SUBJECT: Draft Preliminary Health Assessment

TO: Dennis Dalga USEPA

We are submitting the following draft Preliminary Health Assessment
for your review:

Beloit Corporation

Please review this document for any major technical or factual
errors or omissions. Should you have any comments, please submit
them to us, in writing, for review and transmittal to the
appropriate state health department representative.

Please return the review comments back to ATSDR within 30 days.
Should you have problems meeting this schedule, please let us know
that there will be a delay.

If you have any concerns, please feel free to call us at 353-8228
or 353-8231. We look forward to making this Preliminary Health
Assessment a helpful and useful document.

encl: Draft Preliminary Health Assessment

PRELIMINARY Health Assessment for

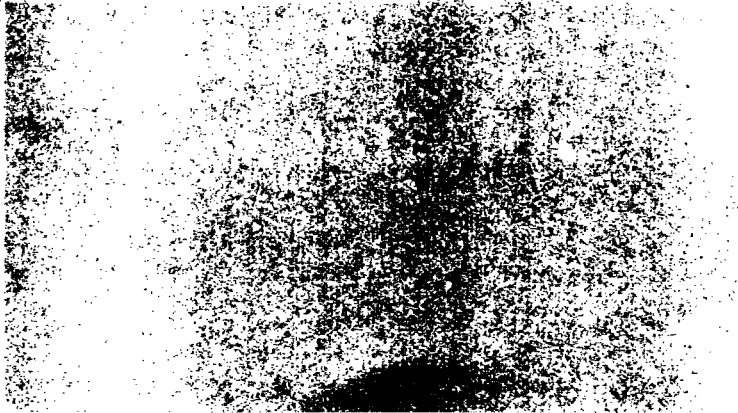
BELOIT CORPORATION SITE

CERCLIS NO. ILD021440375

ROCKFORD, ILLINOIS

MAY 16 1990

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PRELIMINARY HEALTH ASSESSMENT
Beloit Corporation
Winnebago County
Rockton, Illinois
MAY 16 1983

Prepared by:
Illinois Department of Public Health
Rockford, Illinois

Prepared for:
Office of Health Assessment
Agency for Toxic Substances and Disease Registry(ATSDR)

Background

Beloit Corporation (Beloit Corp.) is a 175-acre site proposed for inclusion on the National Priorities List (NPL) by the United States Environmental Protection Agency (USEPA). The site is situated along the Rock River north of the city of Rockton (Figure 1). Beloit Corp. manufactures wet-end paper making machines. There are two operations at the site, the machine manufacturing plant and a research and development facility (R+D) for designing and demonstrating the machines to prospective customers.

According to Illinois Environmental Protection Agency (IEPA) files, wastes are generated only at the R+D section of the facility. Purchased virgin pulp is used in the demonstration machines to make multi-layered paper. The wastewater and paper fibers generated during the process are put into three unlined lagoons located at the northern end of the facility along the Rock River. According to IEPA records, the amount of wastewater generated is 100,000 gallons/day three to four days/week. The water in these ponds is allowed to seep into the ground. Although low levels of chlorinated solvents have been detected in this wastewater, the IEPA has not been able to regulate the lagoons under the Resource Conservation and Recovery Act (RCRA). In 1981, sediment from these lagoons was removed and injected into the soil subsurface near the southern boundary of the facility. Approximately 220,000 gallons of slurry were spread over 10 acres near the southern edge of the facility. In May of 1983, the IEPA detected low levels (<10 parts per billion [ppb]) of several organic compounds in the sludge from the bottom of the ponds. The lagoons and the area of sludge application are the locations on the Beloit Corp. property subject to Superfund.

Groundwater, both on and off-site, is contaminated with various organic compounds including 1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene. Approximately 64 homes with private wells are situated within 600 feet of the

site. Of the private wells, 35 have been sampled for Volatile Organic Compounds (VOCs), and 13 have contained detectable levels of contaminants in their wells. The Remedial Investigation (RI) for Beloit Corp. is scheduled to begin in the Spring of 1989.

The following documents were provided for review: Illinois Environmental Protection Agency Regional files; An Interim Study on Volatile Organic Chemical Contamination in Groundwater North of Rockton, Illinois. S. Otto, G. Michaud, J. Morse 1985; and Beloit Corporation VOC Investigation of the Blackhawk Facility Rockton, Illinois. Warzyn Engineering 1987.

Representatives of the Illinois Department of Public Health (IDPH) conducted a site visit on December 14, 1988.

Environmental Contamination and Physical Hazards

On-Site

With the exception of groundwater, there has been limited environmental sampling performed at Beloit Corp. Soil samples were taken from the bottom sludge of the lagoons in 1983. In addition, four 55-gallon drums were discovered on the Beloit Corp. property during an IEPA inspection in 1985. The contents of the drums were sampled, and the IEPA ordered Beloit Corp. to remove the drums.

Extensive groundwater sampling has been done in the vicinity of Beloit Corp. since 1982. Figure 2 shows the locations of all Beloit Corp. monitoring wells. The Beloit Corp. has been routinely sampling groundwater from the on-site monitoring wells since 1982 as part of their groundwater compliance monitoring program. The following contaminants have been detected in on-site sampling performed between 1983 and 1987:

<u>Contaminant</u>	<u>Media</u>	<u>Frequency of Detection</u>	<u>Range</u>
1,1,1-Trichloroethane	*Soil	2/2	9-10 ppb
	Groundwater	29/49	2-512 ppb
	**Contents of Drums	1/1	20 ppm
Trichloroethylene	*Soil	2/2	5-10 ppb
	Groundwater	18/41	2-142 ppb
Tetrachloroethylene	*Soil	2/2	5-10 ppb
	Groundwater	14/41	2-21 ppb
	***Wastewater	1/1	6.3 ppb
1,1-Dichloroethylene	*Soil	1/2	5 ppb
	Groundwater	2/41	5-13 ppb
1,1-Dichloroethane	*Soil	1/2	30 ppb
	Groundwater	18/41	2-678 ppb
Ethylbenzene	*Soil	1/2	5 ppb
	**Contents of Drums	1/1	30,000 ppm

Carbon Tetrachloride	Groundwater	2/41	1-160 ppb
Xylene	**Contents of Drums	1/1	120,000 ppm
N-octylphthalate	Groundwater	1/41	17 ppb

* Denotes bottom sludge samples taken from lagoons in 1983.

** Results of samples taken from 4, 55-gallon drums found on Beloit Corp. property in October of 1985. The drums were ordered removed by the IEPA.

*** Results of wastewater sample taken prior to discharge to lagoons. Samples taken in May of 1983.

ppb - parts per billion

ppm - parts per million

Off-Site

Approximately 50 residential wells within a 1/2 mile radius of Beloit Corp. have been sampled by IEPA and IDPH since 1982. The following are contaminants detected in nearby residential wells for the time period 1982 through 1987:

<u>Contaminant</u>	<u>Frequency of Detection</u>	<u>Range</u>
1,1,1-Trichloroethane	48/112	1-945 ppb
Trichloroethylene	13/112	2-105 ppb
Tetrachloroethylene	18/112	1-300 ppb
1,1-Dichloroethylene	18/112	1-177 ppb
1,1-Dichloroethane	15/112	1-19 ppb

ppb - parts per billion

Physical Hazards

The Beloit Corp. property is completely surrounded by a fence. Entrance into the facility is gained through a security gate at the north end of the site, thereby restricting site access.

Potential Environmental and Human Exposure Pathways

The most significant environmental pathway of concern at this site is groundwater. Contaminants have been detected in the groundwater both on and off-site and appear to be migrating through the groundwater. Static water level measurements taken from the monitoring wells indicate that the direction of groundwater flow in the area is to the south-southwest.

Domestic use of contaminated groundwater represents the most significant human exposure pathway. The following are various household activities which would contribute to contaminant exposure:

- 1) Drinking - the daily ingestion of contaminated water.
- 2) Bathing or showering - dermal absorption of contaminants through exposed skin surface area; inhalation of evaporated contaminants.
- 3) Cooking - ingestion of food cooked in contaminated water.
- 4) Other household water uses - dermal contact and inhalation of contaminants through water use for household activities such as washing clothes and dishes, and use of a humidifier.

Demographics

Beloit Corp. is located on the north end of the town of Rockton, Illinois, population 2312. There are approximately 300 homes located within a one-mile radius of the site. Blackhawk Subdivision, directly east of Beloit Corp., comprises the largest residential population nearest the site (Figure 2). There are 65 homes in this subdivision, all of which have private wells.

In addition to the private wells in the area, Rockton's municipal well #5 is located approximately 1/2 mile southeast of the site. This well has been routinely monitored for VOCs, and to date, none have been detected.

The Rock River borders the west end of the Beloit Corp. facility. The river in this area is used exclusively for sport and not as a potable water supply. Across the river from the Beloit Corp. facility is farmland. It is unlikely that contaminants from in and around the site would impact upon the farmland in any way.

Evaluation and Discussion

The lagoons and the area used for sludge application are two potential sources of environmental contamination on the Beloit Corp. property. The limited sampling data from the lagoons (one wastewater and one bottom sludge sample) make it difficult to characterize the nature and extent of contamination as well as the lagoons' potential for release of contaminants. The release of contaminants into the air through volatilization is possible. However, the lagoons are located approximately 1/4 of a mile away from any homes. Given this distance, it is unlikely that any volatilization of contaminants from the lagoons poses a public health concern.

No soil samples (other than the lagoons) have been taken at Beloit Corp. Therefore, it is difficult to assess the potential environmental and public health risks from contaminated on-site soils. Since the site is enclosed, direct contact with potentially contaminated soils by people outside of the facility is unlikely.

Groundwater sampling both on and off-site has detected significant levels of contaminants. Five monitoring wells on the Beloit Corp. property have contained levels of total VOC's ranging from 2 to 1273 ppb. These levels are of public health concern. The area of highest groundwater contamination on-site appears to be near well #3 located just west of the site of sludge application.

A large part of the residential population in the area relies on private wells constructed in the shallow alluvial aquifer. Compounds such as trichloroethylene (2 to 105 ppb), tetrachloroethylene (1 to 300 ppb), and 1,1,1-trichloroethane (1 to 945 ppb) have been detected in the residential wells. The maximum level of contamination in these wells occurred between 1985 and 1987. During that time period, sample results showed total VOC concentrations in two of these wells in excess of 600 ppb. These wells were sampled by the Illinois Department of Public Health in July of 1989. The results show that the contaminant levels have decreased (less than 30 ppb total VOCs) and are currently not of public health concern.

Conclusions and Recommendations

Based on the available information, this site is considered to be of potential public health concern because of the potential risk to human health resulting from the possible exposure to hazardous substances at concentrations that may result in an increased risk of adverse health effects. As noted in the Exposure Pathway Section, past human exposure to contaminants has occurred through ingestion of contaminated water, and future exposure may also occur through ingestion of contaminated water.

More environmental sampling of Beloit Corp. property is needed to better characterize the contaminants on-site. Wastewater and sludge from the lagoons need to be sampled in order to identify any contaminants that may be present. Also, soil in the area where bottom sludge from the lagoons was applied should be sampled to determine if this could be a source of the groundwater contamination.

Continued sampling of private drinking wells in the area is needed to monitor the contaminant levels in existing wells and identify any new private wells that may be contaminated. In addition, more information is needed to better characterize the directional flow of groundwater in the area. Current information shows that the groundwater is flowing to the south-southwest toward the Rock River. Assuming this is correct and given the fact that the contaminated residential wells are widely distributed and lie directly east of Beloit Corp., it is possible that more than one source may be responsible for the local groundwater contamination.

A comprehensive Remedial Investigation and Feasibility Study

(RI/FS) is being planned for the Beloit Corp. site. Further environmental characterization and sampling of the site and other impacted areas should be designed to address the environmental and human exposure pathways discussed above. When additional information and data become available, e.g., the completed RI/FS, such material will form the basis for further assessment by the IDPH and ATSDR at a later date.